

Incorporating Register Pressure into an Inlining Compiler

ABSTRACT OF THE DISCLOSURE

5 A method, system, and program product for optimizing compilation. In the preferred embodiment, a compiler compiles a source-code file twice; once to gather register-pressure data, and a second time to apply the data. Thus, the compiler saves register-pressure data during the first compilation and uses it during the second compilation to make informed inlining decisions. The compiler saves two kinds of data during the first compilation: (1) the maximum register-
10 pressure occurring in each procedure; and (2) within each procedure, the register pressure at each call site that is a potential inlining candidate. This data is then fed into the compiler during the second compilation. The compiler uses the data during the second compilation in two ways. First, when deciding whether to inline a child procedure into a parent procedure, the compiler determines whether the sum of the maximum register-pressure and the site register-pressure exceeds the number of available, physical registers. If so, the inlining is not done. Otherwise, inlining is permitted subject to other heuristics. Second, if the child procedure is chosen for inlining into the parent procedure, the maximum register-pressure of the parent procedure is set to be the maximum of its existing value or the sum of the maximum register-pressure of the child
15 procedure and the site register-pressure. This assures that later consideration of the parent procedure for inlining into another procedure can be done with accurate register-pressure data available.